SUMMARY

Two species of the genus *Bothriembryon* occur in King's Park, viz. *Bothriembryon indutus* and *B. bulla*. The latter is polymorphic with two forms:— one white-bodied with yellow shell and another black-bodied with striped shell. The melanic polymorph is rare in the Tuart Association where the yellow form is common; but in the Banksia-Jarrah Association only the melanic polymorph is found. *B. indutus* shows little variation in form and occurs only on the cliffs facing the Swan River. Observations on the natural history of *B. bulla* and the melanic form are reported. The distribution of the soils of the Park are given and the two plant associations present are discussed in relation to the edaphic factors. Cover is present in the Tuart Association but is absent in the Jarrah-Banksia Association after fires. It is suggested that the distribution of the typical *B. bulla* (yellow form) and the melanic form, in the Tuart Association and Jarrah-Banksia Association respectively, is due to predation by the Western Magpie *(Gymnorhina dorsalis)* in relation to relative destruction of cover by fire.

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LITERATURE CITED

Iredale, T., 1939. A Review of the Land Mollusca of Western Australia. *Journ. Roy. Soc. W.A.*, vol. 25, pp. 1-88 (also published as *Rec. W.A. Museum*, vol. 2, pt. 1).

AMANITAS FROM KING'S PARK, PERTH

By J. GENTILLI, Nedlands.

(Continued from Page 34)

Amanita loricata sp. nov.

The type specimen (Fig. 5) was found at the end of June, a few years ago, some hundred yards from the south-western corner of King's Park. At the end of May 1953 another specimen, partly damaged but clearly recognizable, was found in the north-western section of the Park.

Cap 5-6 cm. in diameter, slightly concave except at the edge, of a uniform biscuit colour, covered with patches of small pointed biscuity warts, and with an outer ring of thick raised angular warts, also biscuit in colour.

Gills strongly ventricose, over 1 cm. broad, attenuated outward, rounded towards the stem, adnexed, crowded, white.

Stem 10-12 cm. long, 20-22 mm. thick, subcylindrical, slightly flattened laterally in one specimen, stuffed, with white flakes above and biscuit fibrillose flakes below, and remnants of a superior evanescent cream-white ring. The foot of the stem (seen in the type specimen only) is glandiform, with a distinct furrow which separates it from the stem proper, around the base of which are several rings of fibrils, remnants of the volva.

Spores elliptical to ovate, hyaline singly, white in mass.

This species has a distinct smell of yeast or rising dough, sweetish to faintly sour.

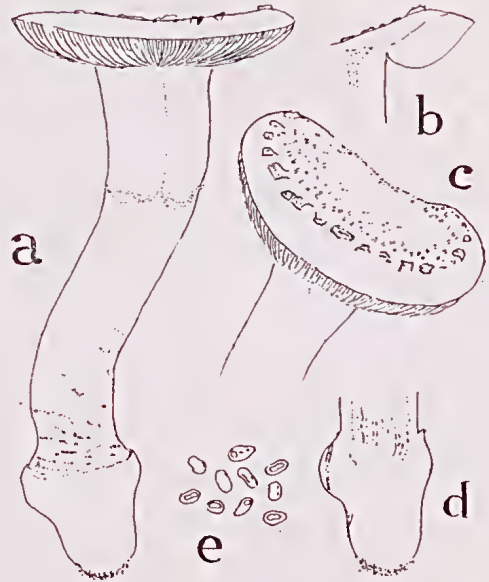

Fig. 5.—*Amanita loricata* sp. nov.

(*a*) Adult specimen. (*b*) Section of cap and upper part of stem. (*c*) Upper view of cap showing arrangement of warts. (*d*) Section of rooting portion of stem showing fibrousness of central part. (*e*) Spores, x 300.

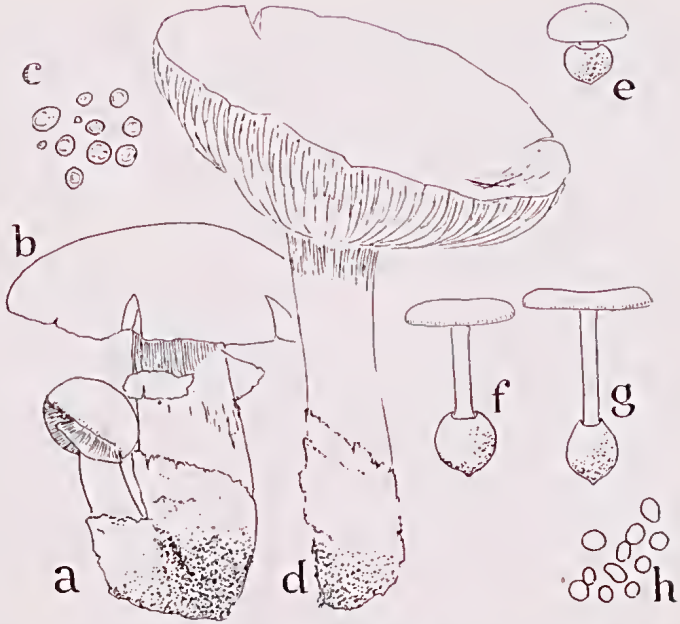

Fig. 6.—*Amanita umbrinella* Gilb. *et* Clel. and *A. pulchella* Cke. *et* Mass.

Left: *A. umbrinella*. (*a*) Very young specimen attached to (*b*) young specimen with torn ring and volva, and marked striations on upper stem. (*c*) Spores, x 300. (*d*) Mature specimen. Right: *A. pulchella*. (*e*) Very young, and (*f*) (*g*) mature specimens. (*h*) Spores, x 300.

Amanita umbrinella Gilbert *et* Cleland

Cooke (1892)* reeords *A. spissa* as found in woods near Lake Bonney (South Australia, a few miles west of Renmark) and deseribes its eap as "amber with a greyish tinge", whereas Bresadola (1927) describes it as *"griseo-fusciduhis, brunneo-fuliginosus"* and Maublane (1946) *"gris-bistre ou gris-souris"*. Should Cooke have written "umber" instead of "amber"?

Cleland (1934) quotes the first deseription of *A. grisea* Massee *et* Rodway, published in 1901 and based on a Tasmanian speeimen; he then deseribes speeimens from South Australia and New South Wales, and diseusses their variations. Willis (1950) states that *A. grisea* is "very similar" to *A. spissa.*

The description of *A. spissa* given by Maublane (1946) applies very well to the speeimens deseribed by Cleland, and to our specimens (Fig. 6 a-d), exeept for the faet that *A. spissa* seems to retain its ring longer, and that its spores are more eonsistently apieulate. On the other hand *A. spissa,* as shown by Wakefield and Dennis (1950), has a cap of a warmer brown than the specimens colleeted. These authors however state that the eap is "greyish or umber-brown . . . eventually beeoming bare" and their deseription could apply to our speeimens. The spores are mentioned as "broadly elliptieal".

Gilbert (1941), after eareful study of a large number of original illustrations, deseriptions and specimens, eomes to the conelusion that: (a) *A. spissa* Fries, named in 1838, is a name to be abandoned beeause the speeies is identieal with *A. ampla* Krombholz, named in 1831. (b) *A. grisea* as deseribed by Cleland (1934) aetually covers two new speeies, whieh he names *A. umbrinella* and *A. grisella,* both probably distinet from *A. grisea* Cooke *et* Massee, a Tasmanian speeies with a eobweb-like veil and persistent volva. (e) *A. umbrinella* Gilbert *et* Cleland has spores whieh do not reaet to iodine as stareh does. (d) *A. grisella* is usually much more slender than *A. umbrinella* and its spores reaet like starch to iodine.

Our view is (a) that Cookc's South Australian reeord of *A. spissa* should be regarded as extremely doubtful, and (b) that our specimens belong to *A. umbrinella.*

Willis (1950) mentions a large ring for the Vietorian speeimens of *A. grisea.* Our specimens have a large ring *initially* (6 b) but may easily lose it with age (6 d). A general deseription is as follows:—

Cap 7 to 14 cm. in diameter, nearly hemispherical when young (6a), then plano-convex (6b), later on plane, and finally upturned at the edges at full maturity (6d). The surface is smooth, slightly stieky in wet weather, in some specimens broken by more or less circular patches about 1-2 mm. in diameter, hardly raised above the surfaee, and usually pale

*See referenees given on p. 34.

grey. The surface of the cap varies from medium grey-brown, especially when young or wet, to pale coffee colour, or dove grey-brown, grading into whitish towards the edges. The edge of the cap is entire or very faintly striate. The flesh is white, unchangeable, firm, with a pale grey-brownish tinge immediately below the cuticle.

Gills sinuato-adnexed, white at first, later very pale greyish-cream, relatively close, 6-9 mm. deep at the centre, attenuated at both ends, with short ones intercalated.

Stem 8-10 cm. long, 13-20 mm. thick in the middle, 15-20 mm. thick at the upper end, 25-40 mm. thick and truncated at the lower end, which may seldom be bulbous. The stem tends to grow hollow with age, and its flesh is white, unchangeable, very firm. The upper end of the stem always shows crowded striations left by the gills (6b, d).

Ring striate outwards, membranous, ample in young specimens (6a), soon torn (6b) and lost (6d). Its position may be superior, median or even inferior. It begins by adhering upwards, but soon drops and becomes pendulous before disappearing.

Volva present in young specimens (6a, b); it soon breaks off, and in most adult specimens all that is left is a line of fibrils around the base of the stem (6d).

Spores subspherical to very broadly ovoid (6c), rarely apiculate, guttulate, hyaline individually, white in mass turning brown when stained with an iodine reagent (no amyloid reaction).

The species is gregarious, and is found in groups of two or more individuals, usually six or eight, in clearings in the forest. It is hard to tell whether it is a moderately heliophilous species associated with eucalypts, or whether it is associated with the plants which invade the clearings.

This species has also been found in June-July at Reabold Hill, Chittering Brook, Mundaring, Darlington, Lesmurdie, Kelmscott, and Merredin.

Amanita pulchella Cooke *et* Massee

This species was first described by Cooke and Massee in *Grevillea,* vol. XVIII, 1, pl. 176/B, and again in detail by Cleland and Cheel (1914) who also gave a coloured table, by Cleland (1934), and more briefly by Willis (1950). All these authors placed the species in the genus *Amanitopsis,* characterized by the absence of a ring. Singer (1949) does not recognize a genus *Amanitopsis,* and places all the former *Amanitopsis* species under *Amanita.* Our observations actually disclosed that very young specimens of *A. pulchella* have the two veils characteristic of *Amanita,* but the partial veil which covers the gills is very friable and soon disintegrates instead of collapsing to form the typical ring. Thus the species belongs undoubtedly to *Amanita,* but it is suggested here that the nature of the partial veil is distinctive enough to warrant the recognition of a separate section within the genus.

Gilbert (1941) in his monograph of the Amanitaceae retains the genus *Amanitopsis* which he defines as having a cap with striate edge, membranous or sub-membranous volva, spherical or elliptical non-amyloid spores, ring present or absent, sub-membranous cap, and hollow stem *without a bulb.* Even this re-definition of *Amanitopsis* does not cover our specimens of *A. pulchella,* all with a well defined bulb (Fig. 6 e-g). The size and

to some extent the shape of the bulb are often affected by soil texture and depth of rooting, and should not always be relied upon as specific or, worse still, generic characteristics.

The type was collected in Victoria. Cooke (1892) states that the *cap* is "*vermilion,* clad with irregular deciduous *whitish warts,* margin saffron-yellow," but Willis (1950) states that Victorian specimens have "*scarlet to orange* caps, clad with a few *paler,* flattened *warts.*" According to Cleland (1934), South Australian specimens have caps "*saffron-yellow to orange,* paling with age, with a few adherent *reddish-orange and white warty* or *patchy remains* of the volva." Our specimens from King's Park area (6 f, g) had caps of a *rich orange-red,* in many instances only *orange-yellow,* with a yellow margin. *No warts* were ever noticed. In a collection from Darlington it was noticed that specimens from red epidioritic soil had orange-coloured caps, whereas specimens from pale granitic soil had yellow caps.

According to Cooke (1892) the *gills* are "white, at length tinged with yellow" whereas Willis (1950) says that the gills are white. Cleland (1934) states that the gills are "white or cream." Our specimens had white gills at first, but a definite yellow tinge appeared fairly soon with age.

The spores vary from globose to broadly elliptical (Fig. 6 h) in the same specimen.

This species has been found in June-July in and near King's Park, and also at Reabold Hill, Chittering Brook, Darlington, Kalamunda, Wungong, Yarloop, and Merredin. It has been recorded in New South Wales, Victoria and South Australia.

ADDITIONAL REFERENCES

Cleland, J. B., 1931, *Transactions Royal Society of South Australia,* LV: 152.

Cleland, J. B., and Cheel, E., 1914, *The Agricultural Gazette of New South Wales,* XXV: 887, 1048.

Gilbert, E. J., 1941, *Amanitaceae* (Milano)—being vol. XXVIII, supplement I of Bresadola's *Iconographia Mycologica.*

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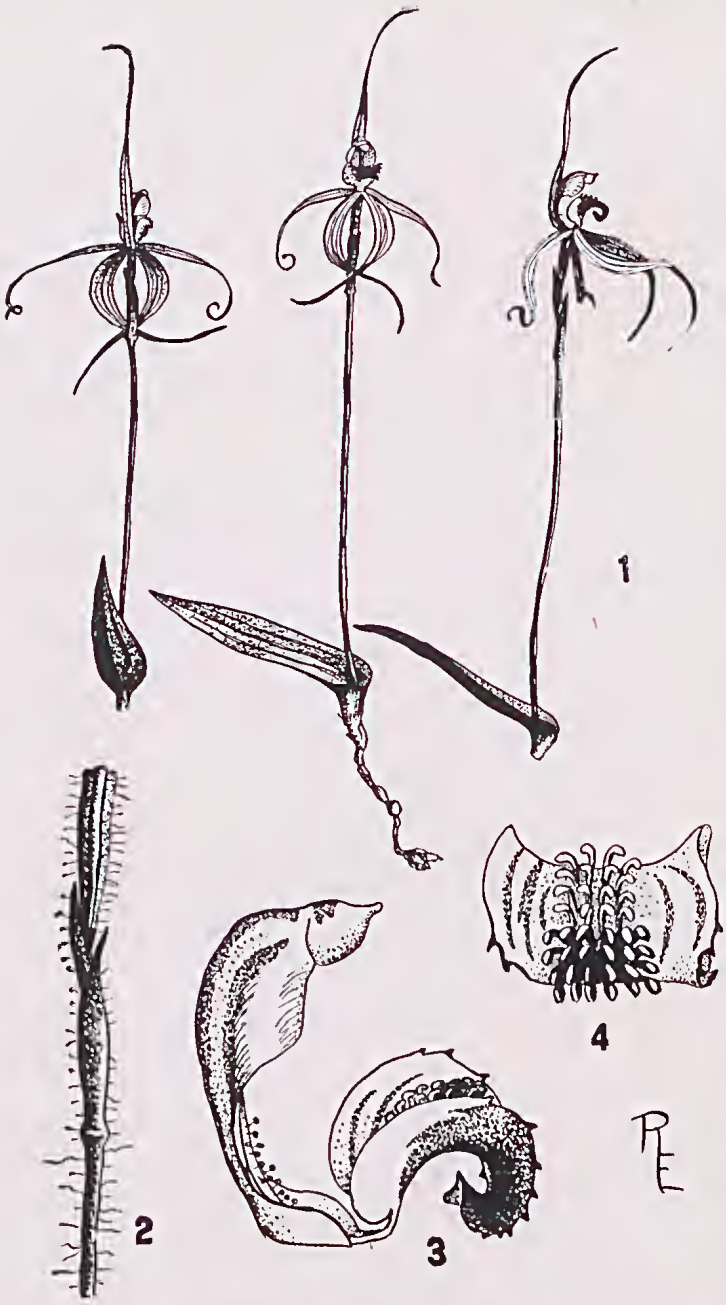

Caladenia glossodiphylla sp. nov.

1. Three views of the plant. 2. Bracts. 3. Side view of column and labellum. 4. Basal view of labellum.